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Dr. Far-row has published a book on the **management** of the Outer Continental Shelf lands and numerous professional papers on the environment, energy, and program evaluation. For a recent World Bank Class A project in Africa, he was the lead economist for assessing the benefits and costs of the project. He has been an economics advisor to five ministries of the environment around the world and was the lead economics author of the U.S. national report for the U.N. Conference on Environment and Development in Rio in 1992. Consulting clients have included: the Audubon Society of Western Pennsylvania, the Department of Environmental Protection of the State of Massachusetts, Exxon, and numerous others. Dr. **Farrow** is listed in Who's Who in America.

**Testimony of Scott Farrow**  
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Panel: Trade and the Environment

Thank you Commissioner Becker. I am representing myself and in my professional capacity as an economist, I claim to consider the well-being of the entire country, not one sector or interest group. Among other experiences, I have worked in the U.S. Executive Office of the President for both Democratic and Republican Presidents. I have advised the environmental arm of the governments of the Czech Republic, Chile, Slovakia, Kazakhstan and Latvia; carried out consulting assignments involving Chad, Cameroon, and Bolivia; had consulting clients that range from the Audubon Society to Exxon Corporation, and was a partner in an organic farm for 15 years. I currently direct Carnegie Mellon University's Center for the Study and Improvement of Regulation at whose focus is environmental, health, and safety regulation.

For many years, a common phrase in the environmental movement was to "Think Globally and Act Locally." I, like many others in the U.S., have expanded that to "think globally, and act both locally and globally." My suggestion today is that the economics approach to environmental issues both reminds us of a concept important to environmentalists, that everything is connected to everything else, and of a concept important to economists, getting the most production out of scarce resources to make society as well off as possible

In economics, the consumer is sovereign just as countries are sovereign. Environmental economics picks up a standard economic theme when it identifies situations where leaving well enough alone is as good as it can get. I view economics as a discipline because it has a stopping rule; there are circumstances where government intervention is justified and others where it is not. For environmental issues, the key cause of intervention are real "externalities" where one person's actions affect another outside of a direct transaction. Pollution that harms individuals is the pito-typical case. The prescription for efficiency is-to act until the additional costs and benefits are balanced. However, finding the additional costs and benefits of either environmental damage or other kinds of activity clearly varies culturally and by income. The technological details of a problem define whether action crosses international borders or not; and whether it is desirable to spread impacts such as pollution, as Treasury Secretary Summers advocated in his controversial World Bank memo of several years ago, or concentrating pollution in a limited area.

There are several general lessons from the U.S. regulatory experience on the environment that apply to the international arena. One is that well designed regulations that deliver environmental improvements at low cost serve both international competitiveness and domestic purposes. We are also learning how to use information in the market-place to better inform consumers. To the extent that voluntary labeling approaches do not violate principles of the GATT, then such actions may both improve the environment and economic well-being. Finally, the environmental lesson from the former Soviet Union is that words on paper do not make a policy. It is our monitoring and enforcement mechanisms, even of economically based policies, that define the success of U.S. environmental policy. So too are monitoring and enforcement of international rules required for their success.

Now for some specifics:

1. Are differences in environmental regulations significant determinants of international trade and therefore a significant cause of the trade deficit? In general, the answer is no. For the majority of the value of trade, environmental regulations are a modest component of cost and the location of production is not significantly affected by such regulations. As one would expect, the impact varies by the pollution intensity of the industry with the more polluting industries are somewhat more affected. This economic finding reinforces the notion sometimes applied to salt and other important but small expense items, namely, the importance of being unimportant in overall decisions. Where environmental regulations are important, we should seek cost effective designs although the cold logic of economics may suggest that relocation is efficient. There is more on equity below.

2. Does one size of international environmental regulation fit all? No. Let me proceed with two examples. As a younger person I worked as a warehouse laborer in the foundry industry in Los Angeles, janitor and farm-hand. I gladly took jobs I would refuse today because I am wealthier and my time is currently more valuable in other uses, but I respect that those are real jobs to be done. So too with countries. We should be careful about imposing our choices of “development jobs” on a country from our wealthy position in the U.S. when it can be all too easy to forget the role of trade and the tough jobs our country took on in its own economic history. Douglas North, an economist, provided a short synopsis of the U.S. history as a developing country: “In Colonial times, America’s relationship with Britain was the most important influence on economic welfare. Later, when we became independent, important supplements to small local markets were made possible by the ability to trade with foreigners. The French and Napoleonic Wars became a significant period of accelerated growth as the United States took advantage of those

markets. In the first half of the nineteenth century, overseas trade in cotton was a source of growing interdependence of the several regional economies in the United States. Immigration and the inflow of capital continuously added to the productive factors and thereby, to extensive growth." Let's not forget our own history.

3. Do non-regulatory environmental decisions matter? Yes. Environmental decisions are embedded in the millions of choices business and consumers make every day. Through the chain of supply, final purchases have varying impacts on the environment, with even services having a significant impact through its use of transportation. These individually invisible transactions are responding to price signals and preferences. Our development path is different because of those choices and like the drops of rain that make a flood, it is those numerous choices that determine trade flows. I support the main task of reviewing the cause and effect of trade and the trade deficit to be identifying areas where the price signals are incorrect to the American consumer. Given my understanding at the current time, I do not believe that environmental issues are causing pervasively incorrect price signals to consumers or producers.

As a second example of non-regulatory impacts, consider the environmentally sensitive topic of oil and gas production in terms of both efficiency and equity. This illustrates what some may consider unintended consequences when actions are linked internationally. Many Californians oppose new development of offshore oil and gas resources although they are a huge market for fuel. But there was an earlier time when California led the world on marine development of offshore oil resources, a direction they turn from today. Second, the oil not produced by such decisions is likely to be made up from imported oil, a significant portion of the trade deficit. Such demands may be met by people in different circumstances such as the Caspian Sea or Central Africa, as oil production seems to be expanding into a variety of places that are opposed by some

environmentalists. A further impact, based on research carried out here at Carnegie Mellon, is that world shipping for international trade is a significant source of global pollution. Finally, there is an equity impact on the rest of the U.S. if a decision by Californians reduces government revenue which either slightly reduces government services or increases taxes. This is one example of how individual decisions, both in the market and in the political arena, alter our development path causing eventual effects on trade.

4. Are there special cases to spur action on the environment when scientific knowledge is incomplete? Sometimes. Situations that involve decisions with irreversibility and uncertainty are receiving new attention from economists through the study of real options. These are similar conditions for when some people would like to invoke a “precautionary principle” to take risk averting action in the presence of incomplete information. In such situations, the standard prescription for taking action appears to be incorrect and instead, those taking action should be more certain that benefits will result. In some problems this may favor the actions of environmentalists as with concern about extinction. In other problems there are business irreversibilities that at times can tip the scale away from doing irreversible damage to industry. The so called “precautionary -principle” needs an improved analytical footing for implementation as it does not always favor one side or another.

5. Equity: A prescription for equity or fairness is generally avoided by economists. However even Nobel Laureate Robert Solow has stated that “There is something faintly phony about deep concern for the future combined with callousness about the state of the world today.” Some environmentalists concern for the well-being of future generations, often stated as sustainability, can overlook the well-being of the current generation. In truth, economists really can’t tell you yet whether we are using resources too fast or too

slow; about the best we can offer is the notion that as a society we should check to see that we are productively investing the net income we receive from natural resources. Second, economists tend to add up costs and benefits to whomsoever they accrue based on a potential compensation criteria developed almost sixty years ago. The modern focus on equity suggests to some economists that actual compensation, to the extent it does not significantly alter incentives, should be considered in place of potential compensation for some groups of the population.

6. Environmental assets: the U.S. presence in international trade is importantly linked to decisions about direct foreign investment. In the environmental arena, there are parallel actions that might be called direct foreign environmental investment to support international preservation of natural environments and other concerns of U.S. environmentalists. I applaud these efforts although they may make slightly worse the total financial flows of the U.S. to the rest of the world.

Looking further into the future, the issue of environmental assets looms even larger. If international trade in carbon emissions occurs such as envisioned by the Kyoto Protocol, either through so called “actions implemented jointly” or through the trading of emission rights, there could be significant implications for international financial flows or trade. In effect, if lower cost reductions of carbon are to be found overseas, then the allocation of property rights in pollution around the world is likely to lead to U.S. companies being significant purchasers in markets for these environmental assets. Money would flow abroad, paper assets would flow to the U.S. At this point I am not making a statement about supporting the creation of those property rights but merely pointing out the welfare increasing aspects of trade in assets that may make worse some of the trade and financial flows in which you are interested. I note also that in a theoretical world where labor and capital flow freely, economists have recently pointed out that trade in goods can

take the place of trade in environmental assets if the incentives were sufficiently strong to actually relocate production in different parts of the world. Hence, whether the **impact** of global environmental agreements shows up in trade or financial flows would be an issue of regulatory design and the quantitative impact of transactions costs.

In conclusion, I find that: 1) environmental issues can justify government intervention up to a point although the aggregate **impact** on trade of current environmental regulations appears to be small, 2) that such intervention should take place with regulatory designs that reduce the financial burden of compliance, 3) that some few environmental issues can justify international action to establish appropriate economic incentives to consumers and producers, and 4) those actions with truly international externalities should be separated from those where we impose our preferences on the development paths of other nations.